

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A system for processing materials in a waste stream, comprising:
an arrangement of separation and grinding devices, the separation and grinding devices being configured in the arrangement to produce three or more product streams from a plastic-rich feed mixture, the product streams including a coarse heavy stream, a ground plastic-rich product stream, and at least one ground light material stream;

wherein the arrangement comprises:

an air-leg separator for separating metal materials from the plastic-rich feed mixture, wherein the air-leg separator is configured to receive the plastic-rich feed mixture and to entrain light materials and allow heavy materials to fall through the air-leg separator,

a grinder in operable communication with the air-leg separator such that at least a portion of a plastic material exiting the separator enters the grinder,

a second separator in operable communication with the grinder, the second separator being configured to receive a ground material stream from the grinder and to separate at least one ground light material stream from the ground material; and

a metal reprocessing apparatus for reprocessing the metal materials derived from the heavy stream.

2-3. (Canceled)

4. (Previously Presented) The system of claim 1, wherein:
the second separator uses air to separate the ground light material stream.

5. (Previously Presented) The system of claim 1, further comprising:
an auger or feeder configured to receive a product stream from the air-leg separator, the grinder or the second separator.

6. (Previously Presented) The system of claim 1, further comprising:
one or more fans configured to push or pull material through the system.

7-8. (Canceled)

9. (Currently Amended) A method of processing a plastic-rich mixture, comprising:
receiving at a waste-goods location at least a portion of a separation system including an arrangement of separation and grinding devices;

operating the system to process a plastic-rich feed mixture including metal materials to produce at least three product streams, the product streams including a coarse and/or heavy stream, a ground plastic-rich product stream, and at least one ground light material stream, wherein operating the system comprises

feeding the plastic-rich feed mixture into an air-leg separator to separate the metal materials from the plastic-rich feed mixture and ~~forming~~ to form the coarse and/or heavy stream,

followed by grinding at least a portion of a plastic material exiting the air-leg separator in a grinder to form a ground material,

followed by sending the ground material from the grinder into a second separator to separate the at least one ground light material stream and the ground plastic-rich product stream from the ground material; and

reprocessing the metal materials from the coarse and/or heavy stream.

10. (Previously Presented) The method of claim 9, wherein:
the devices of the system remain mounted on a transportable platform throughout the receiving and operating steps.

11. (Original) The method of claim 9, further comprising:
transporting the ground plastic-rich product stream to a plastic recovery facility.
12. (Previously Presented) The method of claim 9, wherein the receiving step includes receiving the air-leg separator, the grinder and the second separator on a transportable platform.
13. (Previously Presented) The system of claim 1, wherein the air-leg separator separates the metal materials and thicker plastics from the plastic-rich feed mixture by separating heavier or thicker materials from lighter or thinner materials.
14. (Previously Presented) The system of claim 1, wherein the arrangement of separation and grinding devices are mounted on a transportable platform.
15. (Previously Presented) The system of claim 14, wherein the platform is included in an enclosure housing the arrangement.
16. (Previously Presented) The system of claim 14, wherein the platform is included in a shipping container, a truck trailer or a railroad car.
17. (Previously Presented) A method for processing a mixture, comprising:
moving air in an air-leg separation device;
adding a mixture of plastics and metals to the air-leg separation device, wherein the moving air entrains light or thin materials in the mixture and allows heavier or thicker components to fall within the separation device;
collecting the heavier or thicker components that have fallen within the separation device, including collecting the metals;

from the air-leg separation device, collecting the light or thin materials separately from the heavier or thicker components;
after collecting the light materials, sending the light or thin materials to a grinder; and
reprocessing the metals collected in the step of collecting the heavier or thicker components.

18. (Previously Presented) The method of claim 17, wherein collecting the light or thin materials includes collecting a plastic-enriched product, which has a higher percentage of plastic than the mixture.

19. (Canceled)

20. (Canceled)

21. (Previously Presented) The method of claim 17, wherein collecting the heavier or thicker components includes collecting a rubber-enriched product, which has a higher percentage of rubber than the mixture.

22. (Previously Presented) The method of claim 17, wherein collecting the heavier or thicker components includes collecting a dense plastic-enriched product, which has a higher percentage of dense and thick plastic as compared to plastics collected in the light or thin material.

23. (Previously Presented) The method of claim 17, wherein adding a mixture of plastics and metals to the air-leg separation device includes adding a mixture of particles having an average particle size from 10 mm to 200 mm to the air separation.

24. (Currently Amended) The system of claim 1, further comprising a computerized control system to adjust ~~on~~ one of feed, grinding or fan rates.

25. (Previously Presented) The system of claim 24, wherein the computerized control system automatically monitors the feed, grinding or fan rates and makes adjustments.

26. (Previously Presented) The system of claim 24, wherein the computerized control system remotely monitors use of one or more of the devices in the arrangement.

27. (Previously Presented) The system of claim 1, further comprising one of a magnet, a metal detector or an eddy current device for recovering metal from the heavy stream.

28. (Previously Presented) The system of claim 1, wherein the air-leg separator is capable of separating materials having an average particle size from 10 mm to 200 mm.

29. (Previously Presented) A method for separating a mixture, comprising:
adding a waste mixture containing shredded plastics and metals to an air-leg separator, wherein moving air within the air-leg separator entrains light components in the mixture and allows heavy or thick components to fall within the air-leg separator;

collecting a mixture of the heavy or thick components, wherein the mixture of the heavy or thick components is enriched in the metals; and

collecting a mixture of the light or thin components separately from the heavy or thick components, wherein the mixture of the light or thin components includes a lower fraction of the metals than the waste mixture.

30. (Previously Presented) The method of claim 29, wherein the waste mixture includes rubber and the mixture of the heavy or thick components includes a higher fraction of the rubber than the waste mixture.

31. (Previously Presented) The method of claim 29, wherein:
the waste mixture includes dense and thick plastics and thin and less dense plastics,
the mixture of the light components includes a higher fraction of the thinner and less
dense plastics than the waste mixture; and
the mixture of the heavier components includes a higher fraction of the dense and thick
plastics than the waste mixture.

32. (Previously Presented) The method of claim 29, wherein adding a waste mixture
containing shredded plastics and metals to an air-leg separator includes adding shredded plastics
and metals having an average particle size from 10 mm to 200 mm.

33. (Previously Presented) The method of claim 29, wherein collecting the heavier or
thicker components that have fallen within the separation device collects a product enriched in
metal, rubber and thick and dense plastics as compared to the mixture of plastics, in a single
processing step.